



Arrow Pneumatics, Inc.

RM-95141
DOCKET FILE COPY ORIGINAL

7730 WEST 96TH PLACE, HICKORY HILLS, IL 60457 (708) 598-7000 FAX: (708) 598-1776 WEBSITE: www.arrowpneumatics.com

RECEIVED
MAY 19 1999

FCC MAIL ROOM

May 18, 1999

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the matter of

Amendment of Part 18 of the Commission's
Rules to update ISM Regulations
And Promote Deployment of New
High Bandwidth Communications Devices

OPPOSITION TO PETITION FOR RULEMAKING

Arrow Pneumatics, Inc. (Arrow) opposes any rulemaking that would impose limits within the ISM bands and submits the following comments with regard to the rulemaking petition filed by the Millimeter Wave Communications Working Group (MWCWG).¹

The ISM bands have been internationally agreed upon spectrum for the expressed use of industrial, scientific, and medical applications. These bands represent a tiny fraction of spectrum when compared to the spectrum regulated for communications systems and devices. We believe that these bands should be protected for future ISM use. ISM band usage accounts for a significant portion of the US GNP, in just about every commercial and industrial sector. It is ironic that the communication industry would still be in the vacuum tube era if not for ISM microwave processes, virtually every semiconductor made today uses multiple ISM processes.

¹ The FCC extended the time for filing reply comments for this petition to May 19, 1999

New ISM applications are finding their way into industrial and commercial processes, often saving energy or reducing pollution while enabling a new product to come to market. Arrow has recently introduced a microwave compressed air dryer serving industrial and commercial applications. Compressed air for industry has been called the "fourth utility", and is being targeted by the Department of Energy through it's "Compressed Air Challenge" to become more energy efficient. Traditionally compressed air has been thought of to be a "free utility" and energy efficiency was never an issue. As a result, energy losses from compressed air are 10 to 50 % or more. Desiccant regenerative air dryers common to the industry today use 15 % of the dry compressed air just to operate. Arrow's new Microgen™ uses only 2% of the dry compressed air and uses only 1/3 of the total energy of traditional desiccant regenerative air dryers! This is one example where the existence of an ISM band with no in-band limits promoted a new technology that in the years to come will contribute to national health and economy.

There have been many other examples of new technology and applications that use the ISM bands with no in-band limits; the electrodeless lamp (developed by Fusion Lighting and the DOE), the microwave clothes dryer, plasma processing of semiconductors and industrial coatings, technical ceramic processing, reduction of hazardous waste, and chemical processing. These are just a sample of processes using the ISM bands presently that have been developed after the initial and still largest use of ISM processes of drying products and materials and of course food processing or cooking. These new products and processes add billions of dollars to the GNP. Few of these products or processes would be viable or used if not for the existence and availability of ISM bands with no in-band limits.

ITU issues

The 61.25 GHz. ISM band, along with 4 other ISM bands, were adopted at the 1979 World Administrative Conference (WARC-79) to address the ITU's concern over an ISM equipment working at various frequencies throughout the spectrum. The WARC-79 resolution provided that IF in-band limits are needed, they be specified by the ITU-R in collaboration with CISPR and the IEC intended for the protection of licensed radio communication, not the unlicensed communication devices proposed by the MMCWG.

The FCC must involve the ITU and CISPR before considering any limits to the 5 ISM bands adopted in the WARC-79 as "these ISM bands shall be subject to special authorization by the administration concerned in agreement with other administrations whose radiocommunication services might be affected".

When the MWCWG first petitioned the ITU radiocommunications study group 1 to draft a study question concerning in-band limits to the 61.25 GHz. ISM band, the FCC assured the International Microwave Power Institute (IMPI) and this author, that it would not act on this issue until it collaborated with the ITU and CISPR.² At that time and with those assurances, IMPI dropped its opposition to the study questions. The US committee for CISPR B has brought this issue up at the 1998 CISPR meeting held in Frankfurt, Germany and there was some discussion but no formal action taken. The MMCWG has not yet put forth this study question to CISPR.

The need for in-band limits at 61.25 GHz.?

The members of the MWCWG have petitioned for in-band limits to the 61.25 GHz. ISM band. They state in the petition that ISM devices operating in the ISM band will "threaten the successful operation of communication devices" if there are no limits imposed on the ISM band equipment. They however do not prove where it occurs with technical data. We do not know if their claim is based on ISM equipment with a certain output power, field strength or if the signal is pulsed or CW.

Further keeping in mind that at 61.25 GHz. the free space propagation is naturally attenuated by the atmosphere, it is then, not clear what effect this might have on potential interference, nor is it addressed in the MWCWG petition.

The ISM bands are sections of the spectrum that were wisely allocated for present and future ISM use. Although there are not widespread applications in the 61.25 GHz. band at present, there is evidence of ongoing research in this as well as the other ISM bands. There are 200 kW Gyrotron generators that operate in this band as well as at least one US company that supplies 61.25 GHz. equipment. The petition claims that imposing limits would not be an "unreasonable burden on the ISM community". Arrow Pneumatics does not understand how the MWCWG can make such a claim as to the best of our knowledge, its members do not make ISM equipment. In fact we do not understand how even an ISM band equipment manufacturer can, at this early stage of development at 61.25 GHz., determine what the effect of limits would have to the cost or complexity on equipment or to the market of such equipment.

² Letter from T. G. Mahn representing IMPI to William Luther, Chief of Radiocommunication Policy Satellite & Radio Division dated April 29, 1998

Conclusion

Arrow Pneumatics, Inc urges the commission to NOT begin a rulemaking in the 61.25 GHz. ISM band based on the petition of the MWCWG as they have not shown there is a chance of interference. The FCC should (must?) coordinate with ITU, CISPR, and IEC on this issue.

Arrow Pneumatics, Inc further urges the Commission NOT to begin ANY rulemaking on setting limits in ANY ISM band for ISM equipment. We believe there is too little spectrum set aside for ISM band usage compared to the value in GNP and in the quality of life ISM band equipment brings to the US and it's citizens.

Respectfully submitted,

Wayne Love

Wayne Love
Vice President Technology
Arrow Pneumatics, Inc.
7730 W. 96th Place
Hickory Hills, IL. 60457
Phone 708-598-7000
Fax 708-598-1776